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19 March 1956

The Files

[REDACTED]

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Trip Report, [REDACTED]

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1. On 14 March 1956 a trip was made to [REDACTED]  
 [REDACTED] for the purpose of technical discussions  
 concerning [REDACTED] Those present at  
 the conference were:

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[REDACTED] opened the discussion with a description of  
 the proposed system to be fabricated by [REDACTED] It  
 was proposed that this system would utilize mechanical scanning  
 from [REDACTED] at a scanning rate of approximately 10  
 scans per minute. An inductor circuit would be incorporated  
 to facilitate fast and accurate stopping of this system with signal-  
 actuated stopping circuitry in order to provide for recording of  
 5 or 10-second recording periods of any signal in this range. A  
 series of sliding devices would be provided on the mechanical  
 sweeping drum to allow the operator to prevent stop and recording  
 on a number of known unwanted signals in this area by placing a  
 slide on a given position on the drum or disc as the case may be.  
 The operator would effectively skip by approximately a 4-megacycle  
 area ~~this signal~~ and prevent this area from being recorded although  
 signal is present.

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2. It was envisioned that a single tube of the acorn type  
 would be used for the oscillator and that the remainder of the  
 circuitry, including the IF, audio, erasing, and the signal-  
 actuated scan stopping, would consist entirely of transistors. It  
 was visualized that the motors for operating the scanning device,  
 as well as the mechanical portion of the recording equipment,  
 would be mechanically driven by spring or other physical force as  
 a method of conserving battery power. Using mechanically-driven  
 motors and transistors throughout except for the oscillator, it  
 is calculated that approximately 150 ampere hours of battery life

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would provide close to the required 100-hour operation. It has been tentatively considered possible to utilize the Signal Corps B3402U, which is a 6-volt 80-ampere battery contained in a rather small package. This battery is a dry-charged type utilizing an alkali electrolyte, which would provide for almost an unlimited shelf-life during the walk-in period and would furnish full power upon activation by inserting the electrolyte.

3. The recording device is visualized as a three-track specially designed recorder, carrying demodulated FM on one track, AM on the second, and the third track consisting of a 6000-cycle tone for speed indication. Modulating this 6000-cycle tone up to 10 kc for frequency indication and providing a band below 6000 cycles for voice programming and comments by the operator, this latter portion of the system would require only a single channel. It was visualized that a four-minute endless belt be utilized in the form of a cartridge containing sufficient tape for this period. This would allow the operator to record and erase continuously for a period of a half-hour or more, during which time the entire band could be monitored.

4. It was anticipated that one or more of three types of antennas may be used. One possible antenna for this application, especially at the lower portion of the range, would be a version of the ferrite type. For the higher portion of the range and for intercepting either vertically polarized or perhaps circularly polarized signals, it is proposed that a printed antenna be utilized. This antenna would consist of a sheet of plastic with the antenna in a spiral or other form printed on the plastic. The plastic would be capable of being camouflaged, rolled up, folded, etc., and would be almost weightless as a portion of the 60 lb. package. The contractor has declared that the problem of oscillator radiation through the antenna appears to be quite serious. According to their calculations, with the proposed oscillator operating directly into the antenna, the signal strength of the oscillator radiation at an area 20 miles from the operation would be in the vicinity of 3 to 5 microvolts, which is considered to be quite serious. Consideration is being given to methods for preventing this radiation from becoming this extensive.

5. The contractor has indicated that they would accept this project as a complete system and deliver in the time specified the complete system. It may be necessary to sub-contract antenna and

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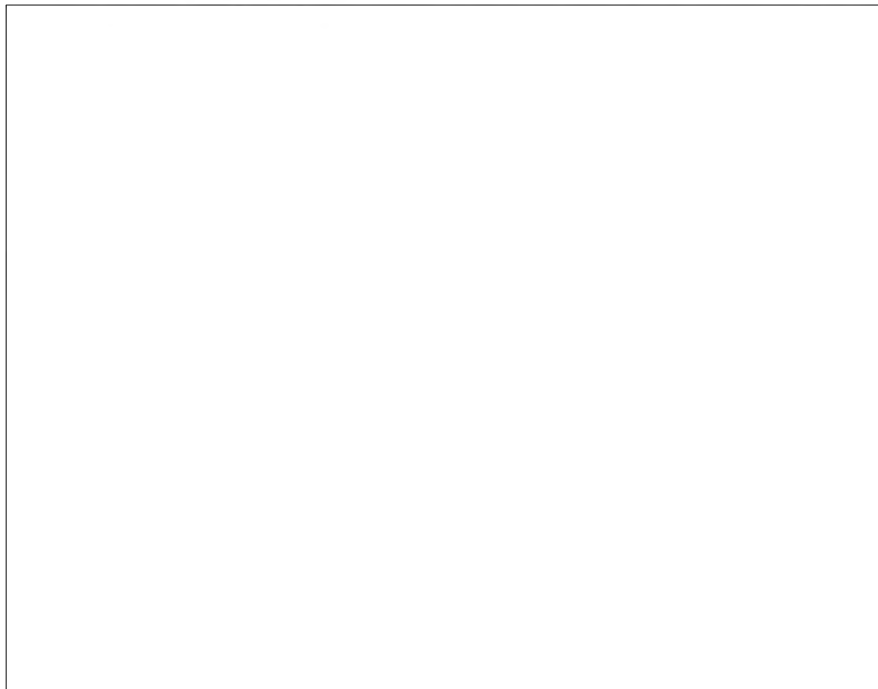
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perhaps a portion of the recording equipment. However, this would be handled on a sub-contract basis, and the complete system would be delivered by [redacted] The following items concerning this project will be investigated in an attempt to provide additional assistance to the contractor in the design of this equipment:

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R&D Subject File  
OC-SPD  
R&D Lab  
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